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"right up to the handle," he is looked upon as a fanatic or fool. Drainage of lands already in sight is thought a waste of money; the idea of fishing up those out of sight under four feet of salt water is too costly to be thought of. But "those Dutch" will do the thing and make money thereby.

The Argus, in its report of the meeting of the board of agriculture, mentions the fact that the care of reporting the meetings of the board for the press of the state, was committed to the agricultural editor of the Farmer, and says it "of course looks towards making that paper more especially than before the official organ of the board."

Those who read the VERMONT FARMER do not need to be informed that it is not, and will not be, the official organ of any board or individual except of those who make it, and of the farmers for whom it is made.

The matter of furnishing reports of the proceedings of all the meetings to all the papers in the state, so that all the people can have some benefit from the meetings and an opportunity to judge for themselves whether the work of the board of agriculture is of any value, was probably committed to Mr. Hubbard for the reason that he originated and introduced the measure and submitted a plan by which it is likely to be carried out with no expense to the state beyond the cost of reporting the papers and discussions and the postage on slips to the press of the state.

## Profit in Dairying Reduced to a Certainty.

While the dairymen of the country are mourning over the low prices of butter and cheese, the patrons of these dairies realizing barely one cent a pound for their milk, and the leading writers wrangling over the use of oleomargarine in connection with skim-milk for the manufacture of cheese, a quiet unassuming farmer of Barre, Massachusetts, well known in Vermont through his visits to several meetings of the Vermont Dairymen's Association, Mr. John T. Ellsworth, has been utilizing the knowledge disseminated at the various dairymen's meetings in perfecting his process of manufacture. Mr. Ellsworth has been for years a successful dairyman and farmer. His good sense and practical knowledge enables him to make intelligent use of the information which is published for the benefit of all. Mr. Ellsworth has for several years been in the habit of selling his milk in winter, as he stated at Montpelier, last winter, and he there expressed the purpose to try summer heating.

Reading farmers know that only the oil, constituting two and one-half per cent of the thirteen per cent of solid matter of milk is utilized in making butter, and that frequently a large per cent of the cream escapes in the whey in making cheese.

Mr. Arnold's statement last winter that the skim-milk annually wasted in the country would, if properly handled, pay the interest on the national debt, set Mr. Ellsworth to thinking, and he resolved to make an effort to save a part of this waste. The dairymen of the country are under obligation to him for the experiments he has made.

The editor of the New England Farmer visited Mr. Ellsworth at his farm to ascertain the results attained, which he gives in that paper, October 30th, of which we make the following abstract:

Mr. Ellsworth milks twenty cows, which run in the pasture night and day. The milk is strained through a wire cloth strainer, then through two thicknesses of cotton cloth, into Empire state pails large enough for all of a milking, which includes the milk of twenty cows belonging to a neighbor with a tank. The water as heated rises to the milk pan, and as it cools falls again to the fire.

As soon as the milk is scalded the hot water is turned off and cold water turned on. This is pumped from a deep well into a tank in the upper part of the milk. About fifty gallons of water are required for cooling the tank of milk down to about seventy degrees.

By this system of handling milk, there is no such thing as "bad luck," or bad weather, known in the dairy room, just as good butter having been made all through the past summer in the latest weather in June or September, and the milk has kept sweet from twenty-four to thirty-eight hours, and would keep longer if desirable. During the summer, when the yield was greatest, the milk was kept in the pans but one day; later in the season, half of it is kept two days before using it for cheese-making.

Mr. Ellsworth has been able to make good butter and good cheese from his forty-two dairy the past summer, every day, thus far, regardless of heat, cold and thunder, and he attributed his success to the fact that his milk is at all times perfectly sweet and sound. On the morning of the day we were there the cream from the previous day's milk was churned and the buttermilk, which was as sweet as the hour it was milked, was mingled with the other milk in the cheese vat.

Mr. Ellsworth would prefer to churn cream slightly acid for making butter for long keeping, but as he is consumed from each week and the buttermilk is very valuable in the cheese vat, he churns his cream while it is perfectly sweet. Great care is needed in churning in a cheese room, but when we state the fact that Mr. Ellsworth has made butter and cheese, both from the same milk, and both of such a quality that he can show better figures on his books than are usually found where only one is made, it seems to confirm the truth of the old saying about the "proof of the pudding," etc. The butter is all sold in Worcester to one man, by the year, at forty-five cents per pound to sell again, and the cheese has been sold as fast as cured to the grocers in the same city, at prices ranging from ten to twelve cents per pound, mostly at the latter price. This is about the wholesale price at most of the dairies where only whole milk is used.

Mr. Ellsworth's price is, however, not strictly

a wholesale but rather a jobber's price, as he sells to those who usually purchase of the wholesale buyer. That his cheese is at least a fair article is evident from the fact that his trade is increasing, and that every sale makes the next one easier and larger.

The object sought by Mr. Ellsworth has been to keep his milk as sweet up to the time it is skimed that it may be worked up into cheese by the ordinary methods of handling new milk practiced at cheese factories, and his success in this direction has been wonderful, and has exceeded his most sanguine expectations. Every dairymen knows that milk will sometimes keep sweet several days in cool weather, but every one does not believe that it can be kept sweet for an indefinite length of time, even in hot weather, if it is kept sufficiently cool. Such, however, is the fact, provided the milk is pure and sound at the start. The object sought in scalding milk in hot weather, as practiced here, has been to render the milk sound and free from all tendency either to sour or to taint under a temperature suitably for raising the cream.

Just how scalding affects the keeping quality of milk is a subject we will not attempt to discuss in this dairy. Our object in visiting this dairy was to obtain facts for the benefit of our readers, and if we are not mistaken the experiments carried on here the present season are of incalculable value to the dairymen of New England.

According to the best estimates, eight or nine millions of cows are kept in the United States for the production of butter alone, yielding annually fourteen hundred million pounds. This butter contains only one-fifth of the solid matter of the milk, leaving all the casein and milk sugar to be wasted, unless it can be utilized as food for swine or other animals. How well this is utilized in pork making, those can best judge who have fattened hogs on milk and meat, and have been able to realize only barely enough to pay for the meal and the first cost of the pigs, which is very often the case as thousands can testify.

In Mr. Ellsworth's dairy all the cream that milk runs off in the whey during the cheese-making process, and probably a portion besides, is secured for butter-making. The remaining cream, together with the casein, which in quantity is nearly twice as great as all the butter contained in the whole milk, is then converted into a valuable food for human consumption, still leaving in the whey an amount of sugar equal to the casein, and which is a valuable food for swine, if fed while fresh and sweet, as it usually is during the first twelve hours after it leaves the vat. We were hardly prepared to believe that milk, fresh when it was given as fine hog food, as Mr. Ellsworth's pens. We were not as large of their age as we have seen fattened upon milk and meat, but they were in good condition for the butcher, and were apparently happy and contented. They are fed about five times per day as much as they will eat, and the whey is always given freely and comparatively sweet. The book had not been closed up for the season at the time of our visit and we could not see the balance sheet, but Mr. Ellsworth is perfectly satisfied that he has never received so high a rate for his milk as the present year. We hope at the close of the year he will furnish a full statement of the year's doings for publication in our columns.

The only figures we took at the time were the following: September 25 and 27, whole amount of milk 1,360 lbs. 36 cows in milk; milk skimmed at 12, 24, 36, and 48 hours on the morning of the 28th cream churned and made 394 lbs. salted butter. Butter, milk and skim-milk made into three cheeses weighing in the aggregate 125 lbs. from the cream, equal to about 119 lbs. of cream. According to the prices then received for cheese, the whole product of the 1,360 lbs of milk would be at least \$33, or more than five cents per quart. If our figures are wrong, Mr. Ellsworth will please correct.

The Vermont cheese factory company, as far as we learned, while on our late visit to Addison county, return their patrons only about 2.15 cents per quart, or one cent per pound for the milk delivered at the factory two days.

Of course there has been a good deal of expense incurred in fitting up the rooms, and in making the various experiments required to bring the business to its present condition, but certainly this first year's experience would seem to indicate that American dairymen have as yet hardly learned the a. b. c. of the best methods of economizing the products of the dairy cow.

## Prizes for Cattle.

The seventh annual show at Crystal Palace, Sydenham, Eng., recently, was a remarkable success, 213 animals being exhibited. About 130 prizes were offered for competition, from five pounds to fifteen shillings, white marks of distinction, which are equally coveted, such as "very highly commended," were also awarded. The best prize was a general rivalry; there were thirty-six candidates, and, as they were all first-class, the decision of the judges was made until after much discussion. The prize-man at last appeared in Master Shinkard's "Tommy Dodd," aged nine years, and valued at £100; the winner of the second prize was also held at the same amount, while the value attached to others in the same class was never below £5. Miss Shortness's cow, "age unknown, possesses a valuable pedigree for six generations," and is valued by its owner at £10,000, but, in face of these substantial arguments, Miss S.'s favorite was not among the prizes, only receiving a high "commendation."

If farmers would show as much interest in the work of improving their cattle, sheep and horses as fanciers do in the improvement of dogs, cats and pigeons, the resulting increase in the value of the farm stock of this country in five years would exceed a hundred million dollars. Who doubts it may compute how much that would be per head.

## Feeding for Butter and Cheese.

Dr. E. S. Sturtevant recently made a report to the District Board of Agriculture a report on the above subject, in which he gives a summary of his conclusions as follows:

1. That the production of butter is largely dependent on the breed.
2. That there is a structural limit to the production of butter in each cow.
3. That when the cow is fed to this limit, increased food cannot increase the product.
4. That the superior cow has this structural limit at a greater distance from ordinary food, and more ready to respond to food than the inferior cow.
5. That consequently the superior cow is seldom fed to her limit, while the inferior cow may be easily fed beyond her limit, and as a practical conclusion, increased feed with

a superior lot of cows will increase the butter product; but if fed to an inferior lot of cows, waste can only be the result.

6. That the character of the food has some influence on the character of the butter, but even here breed influences more than food.

7. That there is no constant relation between the butter product and the cheese product.

8. That the casein retains a constant percentage, and that this percentage does not appear to respond to increased food.

9. That the casein appears to remain constant, without regard to the season.

10. That increase in the quantity of milk is followed by an increase in the total amount of casein.

11. That insufficient feed sets directly to work to check the proportion of butter, and has a tendency to decrease the casein of the milk and substitute albumen.

12. That the best practice of feeding is to regulate the character of the food by the character of the animals fed; feeding superior cows nearer to the limit of their production than inferior cows; feeding, if for butter, more concentrated and nutritious foods than for cheese; feeding for cheese the product succulent material which will increase the quantity of the milk yield.

The propositions contained in the first six, and the 10th, 11th and 12th of the above rules, coincide with the suggestions of the experience of most dairymen of ordinary good sense and perception who regard the matter of increasing the product per cow as not beneath their consideration. They are simply common sense rules, enunciated in the chaste, artistic phraseology peculiar to Dr. Sturtevant.

But if insufficient feed "has a tendency to decrease the casein of the milk and substitute albumen," as we doubt not it has, then it would appear that the casein has not a "constant percentage," as stated in the eighth.

## Cure for Bloating.

In the care of a well fed dairy it has been found necessary to doctor some cows for bloat or bloating, caused by eating largely of succulent green clover. The remedy that is sure every time is composed of one tablespoonful of cayenne pepper, three tablespoonfuls of ginger, half a pint of molasses and a quart of water. These ingredients shaken together and poured down the cow's throat have speedily relieved the most desperate cases. Several instances were told to me of animals as badly off as others that died, in which after receiving the dose they soon regained their appetite, usual condition and flow of milk. This is the remedy used here for ailments of different kinds that affect the general health of horses, such as colic, loss of appetite and fever.—Exchange.

[We have never used the above remedy. It is probably good; can do no harm. Charcoal is useful. Soft soap (one pint) and milk (one quart) is usually effective. So is salt fat pork sometimes.]

## Deep and Shallow Setting.

EDITOR VERMONT FARMER.—What is the theory and practice in Vermont as to setting milk, deep or shallow, for butter-making? The results of recent experiments, made under the direction of the western New York dairymen's association, show that deep setting yields more butter, than shallow. Messrs. Martin Bailey and O. C. Blodgett, two of the best butter-makers in Chautauque county, were chosen to oppose Mr. L. S. Hardin of Louisville, Ky.

They divided the night's milk of fifteen native cows, 185 pounds. The New York gentleman used shallow pans, and made a pound of butter from 21.53 pounds of milk. Mr. Hardin, with deep pans, made his pound of butter from 21.51 pounds of milk, set at a temperature of thirty-eight degrees.

Mr. Hardin also made a trial with a Mr. Reeder, using Jersey milk, with the following results: Set in Mr. Reeder's shallow pans, a fraction over 19 pounds of milk was required to make a pound of butter; set in Mr. Hardin's deep pans, 17 pounds of milk made a pound of butter.

At the St. Louis fair, recently held, Mr. Hardin made an experiment with a Mr. Douglas of Penley, Mo. The shallow pans required 22.02 pounds of milk for a pound of butter; the deep pans required 20.85, at a temperature of forty-two degrees.

Mr. Douglas is described as one of the most successful dairymen in the South. His milk-house cost \$2,000. He uses long pans with cold spring water running under them and keeping them at a uniform temperature of sixty degrees. Half his herd are tubed and grade Jerseys. His butter sells in St. Louis at the highest prices.

[The practice is almost invariably shallow setting. Not the old-fashioned kind of shallow setting, two and a half inches deep, but what is, at the present time, termed shallow setting, viz, five to eight inches. The opinions of nearly all the writers and dairymen concur in favor of shallow setting. A few parties practice deep setting, and champion its advantages with enthusiasm. The discussion of the relative merits of the two systems has unfortunately in some instances degenerated into personal controversy, and a personal victory appears to have become more desirable than the discovery of truth.

It may be regarded as certain that reliable data in dairy matters can only be obtained by a careful series of experiments conducted with untiring patience, by unbiased experimenters, with every other condition precisely identical, and with every possible variation. It is not enough to divide a mass of milk into two equal parts and set one shallow, the other deep, at different temperatures. The milk must be held at the same temperature, and, what is more, different temperatures, and perhaps other differences in condition, must be tested. It may be that deep setting requires a different temperature from shallow. Then a mass of milk must be divided into four or more parts, perhaps forty, and those set in pairs, each pair at a different depth or temperature.]

Nearly one-half, by weight, of all dried plants is carbon.

## For the Vermont Farmer. Coloring Butter.

It is well known among dairymen that a desirable and uniform color for butter is a matter of considerable importance, and that a failure from any cause in this direction, produces dissatisfaction among buyers and a consequent loss to the producer of a poorly or unevenly colored article, usually of about five cents per pound.

The most desirable shade to be obtained, of course, is as near that produced by good summer pasturage, as possible. As the grasses fall in autumn this rich, golden coloring diminishes in its intensity, and from this time until the following June, it is found necessary on most farms to employ artificial coloring matter, of some description, in order to obtain the desired shade.

Formerly, and at the present time, butters are used to some extent for this purpose, many farmers believing that nothing else is quite as good, either to give the real golden color, and as they claim a "gram flavor." The first is, or can be, if properly used, almost an exact imitation; the last is probably largely fancied and some claim is detrimental to the flavor of butter, injuring its keeping qualities.

The raising and using of carrots for this purpose is attended with a good deal of labor and trouble, so much so as to induce many to use home made preparations of annatto, instead. If properly prepared, a tolerably good color is imparted to the butter, but more generally a dull, reddish tinge is given, the result of imperfect preparation, or of using too much. To do away with the greater labor and cost of using carrots, and also to secure a better and more uniform article than the annatto prepared at home, upon the farm several preparations of annatto have been put upon the market ready for use and offered at reasonable rates.

Most of these are very good for the purpose, but one great difficulty is, if a little too much is used, a reddish tinge is imparted instead of a golden or orange as desired.

I have been using for some time the "golden extract," a preparation put up for the purpose, by Wells, Richardson & Co., of Burlington, this state, and find it to possess these important advantages over most others now in use. It takes a less quantity to produce the required color than any other kind tested, the amount needed, being very small and yet, with this small amount, as the name indicates, a golden color is imparted to the butter and free from any reddish cast whatever. There is little of taste or smell to be distinguished in the article, which appears to be very pure, mild and yet, as we common enough, as the results have proved.

The proprietors of this preparation are introducing it throughout the country as fast as possible, and are meeting with the most flattering success, receiving the commendation of individuals using it, and the highest awards at agricultural fairs where exhibited. From my experience with the "golden extract," I can cheerfully recommend it as a most desirable article for the purpose, and worthy of general use.

FRANKLIN CO. DAIRYMEN.

[The above is from a reliable dairymen and agricultural writer, and is undoubtedly worthy of full credence. It will be remembered that Mr. Arnold gives the opinion that carrots do affect the keeping quality of butter by their decomposition.

## Heating Milk.

We have alluded to what seemed to us the undue bias of agricultural writers in condemning Prof. Arnold for his statements concerning heating milk, based upon the unfavorable result of a single experiment at the Elgin factory. The account of Mr. Ellsworth's dairy, which we copy in another column from the New England Farmer, shows that the system of heating to 130 degrees, even in summer, is not necessarily attended with disappointment. Prof. E. W. Stewart, editor of the Live Stock Journal, mentions in the country, takes up the subject as follows, in a recent issue:

This mode of preserving milk from decay has received much discussion during the last two years, and Prof. Arnold's experiment at the Elgin butter factory, last spring, seems to have stirred up a very unnecessary excitement, which Maj. General Allen has kept for several years, and Forester Allen's record. After detailing the facts of the experiment before the report gives the weather signs by which the approach of a storm is heralded, and these, by the way, are considered more reliable than the instructions of the dairyman. Old weather prophets will be interested in comparing these rules with the maxims which they have drawn from their own observations. We append the signs:—

- 1.—As a rule, if the wind touches north-east or east for two or three days, it is a sure sign of rain, and the milk should be heated.
- 2.—Dense smoke and haze in early morning, or late evening, is a sure sign of rain, and the milk should be heated.
- 3.—Summer showers of light character often follow two or three days of smoke or haze.
- 4.—Fog, frost and dew precede rain 24 to 48 hours, except fog at close of storm.
- 5.—Wind veering from north or west to south and southeast precedes falling weather.
- 6.—Halo, lunar and solar, also fairly defined and brilliant aurora, precede rain 24 to 48 hours.
- 7.—Barometer rising or falling considerably away from its mean forbodes falling weather, subject to modifying influences of the neighboring ranges of mountains and hills.
- 8.—Precipitation generally follows a rapid fall or rise of the barometer.
- 9.—If wind is in southwest and rain sets in, the rain is of short duration and light yield.
- 10.—Banks of watery clouds or heavy haze on south and southeastern horizon indicate rain.
- 11.—An area of low barometer at or near Fort Monroe and running up the coast surely reaches here as a northeaster.—[Springfield Republican.]

## A New Letter from France.

A correspondent of the New England Farmer writing from France, touches a variety of interesting topics. Among others we quote as follows:

It is no secret that many landed proprietors in France have well nigh ruined themselves by the rearing of stock and the production of root crops, and now adopt, since some ten years, a plan of cultivation which dispenses with farm-yard manure, cattle, servants, etc. It consists in the adoption of a rotation, comprising, first year, wheat, second year, oats, each manured with superphosphate of lime, and sulphate of ammonia, at the rate of six cwt.